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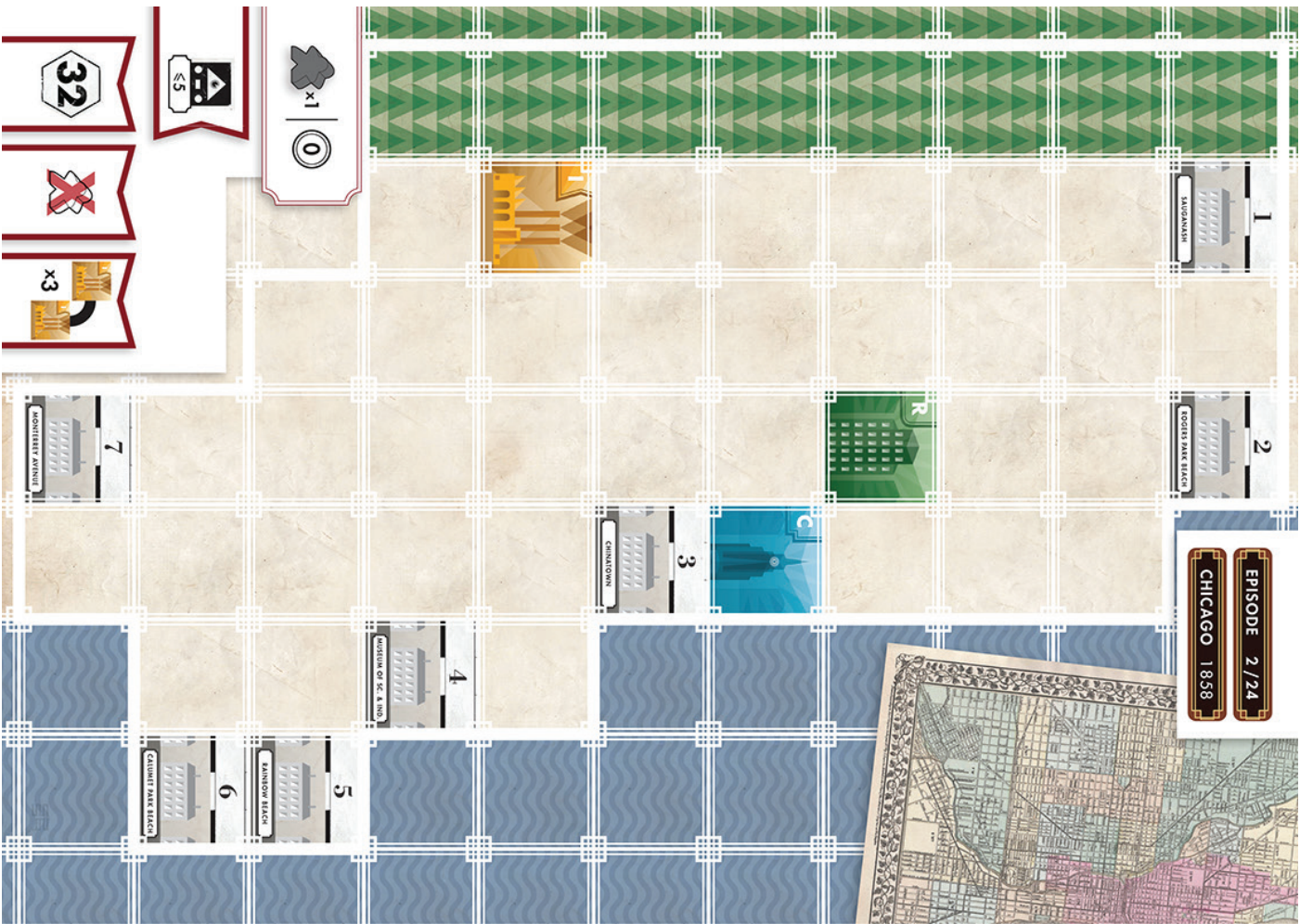
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Game Interface Elements:

- Money counter: 0 1 2 3 4
- Inventory:
- Map navigation:
- Other icons:



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Tramways Engineer's Workbook Volume 2

A strategic puzzle game book for 1-2 players by Alban Viard © 2024; rules edited by Nathan Morse

You used to be the Financial Director of the Small City Tramways Company, the biggest tram company in Small City. But you have completed the first part of an internship to take over the seat of the current C.E.O., Nabla Draiv, the famous founder of this lucrative urban transport company...

For the next stage of your training, you must complete 24 challenges in different cities. In each, you will grapple with the peculiarities of the terrain and local policies, while building a tramway network that meet's the city's goals!

Only a future great leader will have shoulders strong enough to bear so many problems. Enough dilly-dally! Let's continue your training now! You're not going to let Mr. Draiv run everything forever, are you?

Note: This book will teach you all the rules of the game, so you can solve the 24 puzzles contained in it. If you've just completed **Tramways Engineer's Workbook 1**, you can skip the instructions, and dive straight into the challenges. Otherwise, if you are very familiar with the original **Tramways**, you will be able to skim these rules so you understand how to use the workbook and a pen to play your favorite game.

Components

- This book.
- 2 dry-erase pens, 1 in each color.

Overview

As you play round after round, you will write directly on the book with your dry-erase pen. Sometimes you will erase your markings as dictated by the rules.

Unlike in **Tramways Engineer's Workbook 1**, which was tutorial style, building the rules cumulatively, in **Tramways Engineer's Workbook 2**, you play with all the rules right from the beginning. Instead, each puzzle has its own peculiar rules, which do not carry over to the next puzzle.

Each puzzle is played over a different number of rounds. When the round is over, you mark off the number of the round with your pen (you'll find the Round track on the right page of the spread) and move on to the next round.

Starting a Scenario

When you tackle a new city, first read the victory conditions in the ribbons on the left page of the spread. If you meet all the victory conditions, then you have solved the puzzle and you can turn the page and move on. Otherwise, you must start that puzzle over (erase everything) and try a different strategy.

Here are the types of victory conditions you will see in the puzzles:



Move all passengers: The board must not contain any passengers after the end of the last round.



Deliver to all buildings: Each building on the board must receive at least one passenger as a final destination.



Connect all buildings: At the end of the game, you need to have a connected network. This means that all buildings must be linked (no more isolated, disconnected buildings on the map).



Build on all parcels: Each and every parcel already printed on the map must have either a building built on it, or both have rail built on it and be connected to your network.



Get a certain amount of money (e.g. reach or exceed \$90).



Get a certain number of Happiness Points (e.g. reach or exceed 45 HP).

Passengers everywhere: Finish the game with a passenger on each and every building space!

Rail workers: You must end the game with at least 5 Rail Workers.

2-player game: Only players with 5 rail workers will compete in the final scoring. In other words, a player who has fewer than 5 rail workers immediately loses the game... which could be both players.

Network all Industry: You must link all Industrial buildings on the map to each other.

Network all Commerce: You must link all Commercial buildings on the map to each other.

Network all Residence with upgraded links: You must link all Residential buildings on the map to each other with an upgraded network. For example, $R====C====R$, or $R==R$.

Network all Leisure with upgraded links: You must link all Leisure buildings on the map to each other with an upgraded network. For example, $L==C=R==L$, or $L==L$.

Upgrade all links: You must upgrade all built links.

Large Commerce building: You must build a big Commerce building of size 4 (4 contiguous Commerce building spaces). It does not need to be a specific shape.

Low stress: End the game with ≤ 6 stress (6 or lower).

No passengers at work: No passengers can still be in Industries at the end of the game.

Upgrade all buildings: Upgrade all the buildings you build during the game (this does not apply to those already printed on the board).

Example:



In this puzzle, you must end the game with no more passengers on the map, and with at least \$65.

Setup

1. Draw a passenger in each building space on the map by drawing a circle (or better yet, draw a real passenger if you can).
2. You start the game with 2 rail workers, so circle the number 2 on the Rail Worker track.
3. You start the game with \$0, so write "0" to the right of the coin (below the Rail Worker track).

4. You start the game on the first 1 space on the new Stress track.
5. You start the game with 0 Happiness Points, so mark the number 0 on the HP track around the outside..
6. See **Episode Twists** at the end of the rulebook for the episode you are playing.

Playing a Round

The sequence of play is as follows:

1. Action 1
2. Action 2
3. Self-Help
4. Update

Phase 1: Action 1

Start the round by performing any available action. To perform an action, you must use a combination of icons that appear on the tickets depicted on the right page of the spread. You may spend **multiple tickets** to get all the icons you need to perform your action. For each ticket you spend, mark an **X** in the hole in its upper-right corner.

Each ticket general contains several icons you can use. You may use **one** icon from each ticket with no consequences. However, you may use more of the icons on it — even all of them — but the more icons you use from a single ticket, the more **stress** you take on. You will track this on the Stress track at the bottom of the right page of the spread.

Stress

When you use a ticket, you have the option to use a second icon on the same ticket for that action (using two icons for a single action). This advances your stress 1 space to the right on the Stress track (adjust with your pen). Using three icons on the same ticket increases 2 spaces on the Stress track, and so on.

If you reach the last space of the Stress track, you immediately lose 1 HP. Each time you must increase your stress when you are on the last space, you stay there but get -1 HP.

Consequences

Some tickets have a negative consequence in a rhombus in the lower-right corner. When you use the ticket, you must first pay that consequence. If you cannot pay, you cannot use the ticket!

Here are the types of consequences you will see on tickets:

Pay \$3: Pay \$3.

Increase Stress: Increase your stress level one space to the right.

Development Tickets

Not all of the tickets depicted on the right page are available at the beginning of the game. You only have the tickets that are above the line. Each ticket below the line is inaccessible until you unlock it. When you deliver a passenger to a Commerce building, you have the choice between gaining \$5 or unlocking a new **Development ticket** (the tickets below the line). You will mark the ticket with a **✓** to indicate that this ticket is now available. This ticket can be used just like the rest of the tickets now. These Development tickets are generally quite powerful, because they contain more or powerful icons, or icons to which you had no access at the beginning of the game.

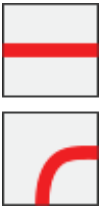
Icons

Reclaim Tickets: Reclaim 4 tickets in the Update phase.

Action: Build a Link

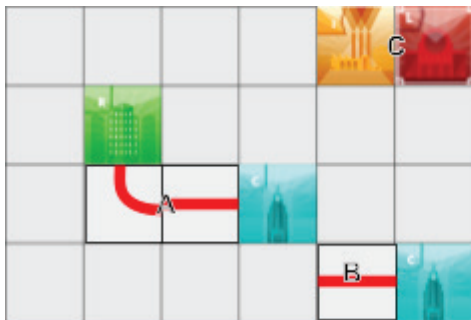
Each city contains several types of buildings that you will connect to each other with “links” comprising one or more rails, in order to move passengers eventually. A rail is either:

- a horizontal or vertical straight line in the middle of the space, connecting the two opposite edges.
- a curve connecting two adjacent edges of the same space.



A link is considered complete when there is a building at each end of it. A complete link therefore always requires at least one space on the map.

Example:



Link A is complete. It consists of two rail segments.

Link B is not complete, because it does not connect to a building on its left end.

There is no link at C. These buildings are not connected without a link between them.

Note:

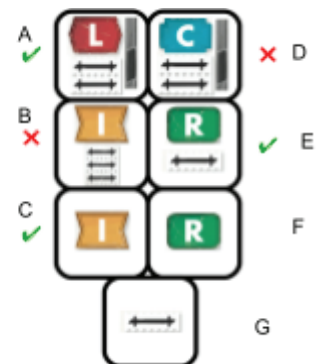
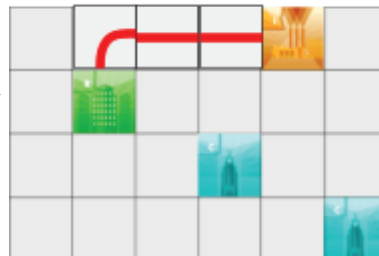
- 2 adjacent buildings of different colors are not connected until you create a link to connect them.
- 2 adjacent buildings of the same color form a single, larger building.

To build a single complete link, you must use the exact number of **Rail icons** required to connect these two buildings. Each board space requires one Rail icon. You are, however, welcome to build incomplete links that you intend to complete later.

You must also use a **rail worker** (once per **action**, not once per rail, not once per link). Whether building a complete link or working on an incomplete link, you must use a rail worker (adjust the number on the Rail Worker track). If you do not have any, then you cannot build rail!

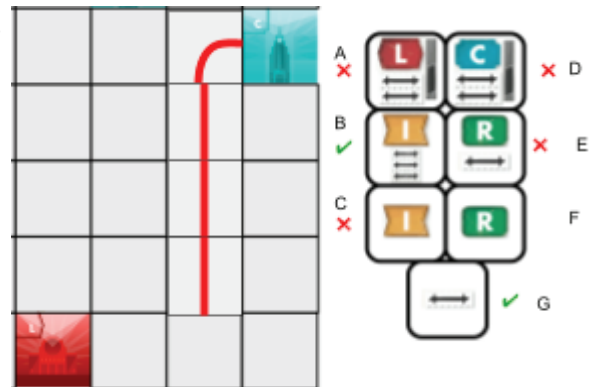
If you complete the link, in addition to the Rail icons, you must also use a **Destination icon** that matches a building (or parcel you own; see **Terrain**) to which the link connects. Thus, when you complete a link, the Destination icon can match the building/parcel at either end of the link.

Example: You build a complete link between an Industry and a Residence that are separated by 3 spaces. You need to use 3 Rail icons and one Destination icon (either a yellow I or a green R), put an ✗ in the tickets you use, and draw the 3-rail link on the map to connect the 2 buildings. You cannot choose tickets B or D, because they already have an ✗. You could choose ticket A (2 Rail icons), ticket E (1 Rail icon), and ticket C (yellow I icon). You would put an ✗ in these 3 tickets, making them unavailable for the remainder of this round.



If your link is not complete, then you do not need a Destination icon yet. Nevertheless, you will have to continue this track in the next round, otherwise it will be completely erased. You do not have to complete the link in the next round: Expanding it by even one space is enough to avoid its destruction. You may need to do this when you don't have enough tickets to complete the link.

Example: You build 4 rails, starting from the blue Commerce building using tickets B and G which are still available. Because the link is not complete, you do not need a Destination Icon.



Notes:

- You must draw every rail depicted on the icons you use (e.g. if you use a 3-rail icon, you must draw all 3 rails on the map).
- All the rails from a single action must be part of a single link; you cannot work on 2 links at once.
- On any single space, there may be a crossroad or 2 curves in the opposite corners of the space, but no more than that.



Terrain

Parcel: A numbered space. A parcel you own can be one of the endpoints of a complete link, just like a building can. You may also build rail and buildings in parcels you own (if the parcel is on a still-locked Development ticket [below the line], you don't own it). You cannot build on parcels you don't own. It is even possible to build a building on a rail already running through a parcel. If you do, erase the rail from the parcel and add the letter of the building you wish to build as usual.

Mountain: Mountain spaces cost +1 Rail, thus it costs 2 Rail icons for each mountain space in which you build rail.

Lake: You cannot build on lakes.

River: You must build a bridge if you want to cross a River space. A bridge costs +2 Rail, thus 3 Rail icons.

Forest: A new type of land is now available: the Forest spaces. You must spend **1 Happiness Point per rail** built in the forest. If you do not have enough Happiness Points, then you cannot build in the forest.

Action: Move a Passenger

You must use a ticket containing a **magnetic strip**, and a **different** ticket containing a **Destination icon** for the passenger's **final** destination.

The number of buildings crossed during the trip is not important; however, in general, crossing a larger number of stations will be more profitable.

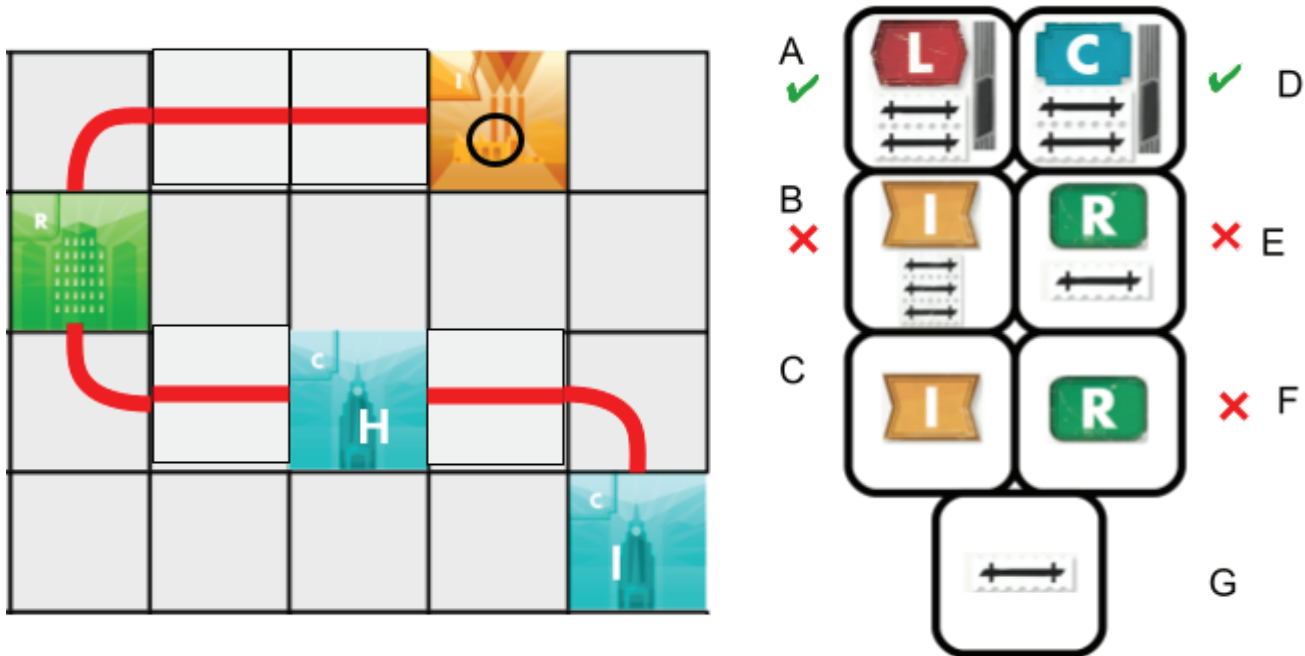
The passenger stops at the first building on its path matching the Destination icon you used.

You **earn \$1 per rail segment** used during the trip. Write your new total \$ in the money space.

You also **score 1 Happiness Point per link traversed**; however, the passenger can only use each link once per trip (no doubling back or looping).

Once the passenger has moved, remove the passenger from the map (just erase it with your cloth).

Example: You play ticket A (Magnetic Strip icon) and ticket D (Destination icon C). The passenger in the Industry space moves to Commerce H. This passenger cannot go to Commerce I because the passenger stops at the first building matching the Destination icon. Mark both ticket A and ticket D, because these have now been used.



It is quite possible, if you have the required tickets, to do the same action twice, e.g. *build 2 links (complete or not), or make 2 passenger movements.*

Note: If the originating building has 2 or more adjacent spaces of identical color (basically a rectangle or even bigger), then any of the passengers still present can be moved out any edge of this large building.

Transport to Commerce

When you deliver a passenger to a Commerce building, you have the choice between gaining **\$5** or unlocking a new **Development ticket** (the tickets below the line), but either way, you also **increase your stress** level one space to the right. Mark the ticket with a ✓ to indicate that this ticket is now available. This ticket can be used just like the rest of the tickets now.

Transport to Industry

When you deliver a passenger to an Industry building, you get a **rail worker**, but you also **increase your stress** level one space to the right. Adjust the total of the number of rail workers on the Rail Worker track. Remember that you cannot exceed the Rail Worker track's maximum. Even if you already have the maximum, you are still allowed to transport a passenger to an Industry building; you simply don't get the rail worker from doing so.

Transport to Leisure

Now, when you are transporting a Passenger to a Leisure Building, but **before earning your income** from the trip, you have a one time opportunity to buy Happiness Points at this cost:

\$1 = 1 HP, \$3 = 2 HP, \$6 = 3 HP, \$10 = 4 HP, \$15 = 5 HP, \$21 = 6 HP, etc.

Transport to Residence

When transporting a passenger to a Residence building, you **lower your stress** level one space to the left.

Transport to Grand Station

When you move a passenger to the Grand Station, you unlock an exclusive **Development ticket**, with these two icons: +\$3, +\$3 (to get +\$6 from it, you must take on stress).

Transport through Park

When you move a Passenger through the Park, you **lower your stress** level one space to the left.

Transport through Stock Market

When you move a passenger through the Stock Exchange, you get **1 HP** and **\$5**.

Transport Along an Upgraded Link

When you transport a passenger on an upgraded link, you earn **50% more money**, rounded up.

Action: Build a Building

To build on a parcel, you must use the following two icons:

- The **Build a Building icon**.
- The **parcel number** on which you wish to build

Mark the tickets with an **X** as usual. Which type of building you build on the space is completely up to you (you do not need to play its icon in order to build it); you can build the following:

- A Residence building: Draw an R on the parcel.
- A Commerce building: Draw a C on the parcel.
- An Industry building: Draw an I on the parcel.
- A Leisure building: Draw an L on the parcel.

You must also **add a passenger** to the new building: Draw a passenger on it.

Tip: After building, mark out the parcel number on the map space, and cross out the matching parcel icon on the ticket, because you have no further use for it (unless you have to retry this puzzle).

Action: Upgrade Completed Link

To upgrade a completed link you must play:

- The **Upgrade Rail icon**.
- One end of the complete link: the **Destination icon** matching either end.

Draw a second, parallel link between the two buildings (in the same spaces) to indicate that the entire link has been upgraded.

Action: Upgrade Building

Upgrade a building you have built on your parcel (not those already printed on the map). To upgrade a building, simply play an **Upgrade a Building icon** and a **Destination icon** of the type of building you want to upgrade. *For example, if you wish to upgrade a Residence, you need to play the Upgrade icon + an R icon.*

Note: This upgrades a single building on a single space. If you want to upgrade a contiguous “larger building”, you must use an action for each parcel whose building you wish to upgrade.

Also **add a Passenger** to the upgraded building space if it did not already have one on it.

Immediately **score 3 Happiness Points** on the HP track.

When the building is upgraded, draw a ^ above the letter to show that it has been upgraded.

Note: You cannot upgrade a building that has already been upgraded.

Action: Pass

Performing only one action during the round saves you tickets for the next round, but you’re still giving up an action: You do not get any special bonus for passing. ...but sometimes you paint yourself into a corner, and have no other option!

Phase 2: Action 2

Perform any available action, regardless of which action you performed in Phase 1: Action 1.

Phase 3: Self-Help

In this phase, you may use any or all of the following options to improve the situation:

Get Money: If a ticket with the money icon is still available, you can use it to earn the amount of money indicated on the icon. Mark the ticket with an **X**.

Hire Rail Workers: If you have a ticket with the Rail Worker icon and if this ticket is still available, you can use the ticket to get one more rail worker. You can never have more rail workers than the Rail Worker track allows. Mark the ticket with an **X**.

Add New Passengers: You can add a passenger to an empty building space, by using an available ticket with this icon. Mark the ticket with an **X**.

Get Happiness Points: Use a ticket with this icon to take 2 Happiness Points. Mark the ticket with an **X**.

Reduce Stress: Use an available ticket with this icon to decrease your stress, moving it 1 space to the left on the Stress track. Mark the ticket with an **X**.

Phase 4: Update

1. Reclaim Tickets

Once you have performed your two actions (or fewer), **you get 4 tickets back**. Simply erase the “x” you drew beside each ticket you want to have back for next round.

2. New Passengers Arrive

New passengers then arrive in each **empty** building space that matches the current round. *For example, in a round that refills Residences, an empty Residence of size 2 would get 2 passengers.*

3. End of the Round

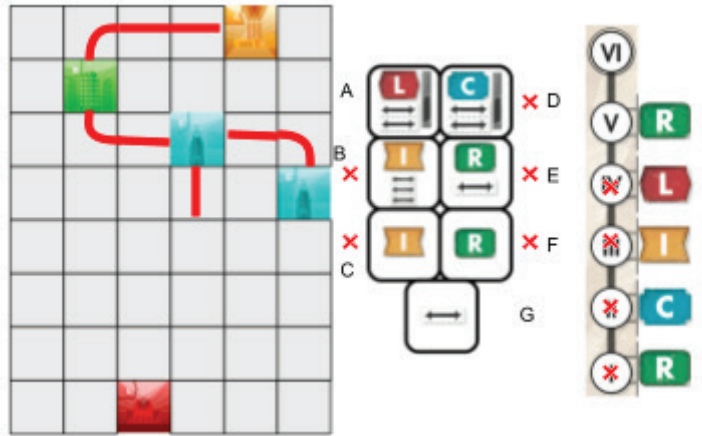
If you are still on the last space of the Stress track, -1 HP. *When your stress gets too high, you really must reduce it!*

Mark off the current round and begin the next round.

Example: It is the end of round 5, and you choose to recover tickets B, D, and F for the last round.

Round 5 says that you add a passenger to each empty Residence: Draw a circle in the Residence.

Mark off round 5, as well.



End of the Game

After you have played the last round, perform the following final scoring:

- **\$10 = +1 HP:** Each full \$10 you have at the end of the game is worth 1 HP.
- **1 Stress = -1 HP:** Stress is counted as negative Happiness Points at the end of the game.
- **1 Completed Link = +3 HP:** In the final scoring, each completed link will score an additional 3 Happiness Points.

Check to see if you met all the victory conditions. If you did, go to the next puzzle by turning the page; otherwise, start again, and take a different approach.

Suggested Symbols to Use While You Work

As you work through these puzzles, we suggest you use the following symbols:

- **Passengers:** an empty circle in the upper-right corner of the building.
- **Buildings on Parcels:** the letter R for Residence buildings, C for Commerce buildings, L for Leisure buildings, and I for Industry buildings.
- **Upgraded building:** a ^ above the Building Letter (e.g. \hat{I}).
- **Link:** a straight line or a curved line crossing the empty space / parcel.
- **Upgraded link:** a double line or a double curved line crossing the space.
- **Building that gets a passenger as a final destination:** a small X in its lower-right corner.

2-Player Rules

Excellent work on your training so far; however, as important as you aspire to become, the world is not all about you. So, in order to prepare you for real-world competition, we will give you the opportunity to compete with a "sparring partner" on some of these exercises. Find an opponent with training comparable to yours (if your opponent is weak and easy to beat, what could you possibly learn?), select a 2-player-compatible puzzle, and we will begin the competition.

Note: All puzzles are 2-player compatible except for 4, Cape Town.

All the rules apply for both players except for the following changes stated below.

Overview

- Each player uses a pen of a different color.
- The two players sit or stand next to one another in order to have the book in front of them both.
- Each puzzle has one main objective, and possibly several secondary objectives.

- For the main objective, look for the “2p” icon under the victory conditions. For example if the “2p” is



under the  Icon, it means that the wealthier player at the end of the game is the winner.

Playing a Round

Each player updates their own cursors (number of workers, money, happiness point, stress level) in their respective column. One of the players will be Player A and the other player is Player B. Randomly determine who starts as Player A.

Phases

Player A starts the game and performs only one action. Then Player B performs his 2 actions consecutively. Player A ends the round and plays her last action, according to the ABBA scheme. Both players must respect the following rules when choosing tickets:

- The same player cannot play the same ticket twice during an ABBA cycle.
- Player A may use a ticket already used by Player B and Player B may use a ticket already used by player A. Thus, after both players have played their actions, a ticket cannot have more than 2 crosses next to it: one of each color.

The 2-player play sequence is as follows:

- Player A: Action 1
- Player B: Action 1, Action 2, Self-Help
- Player A: Action 2, Self-Help
- Both Players Update
- Player A \rightleftharpoons Player B

Development Tickets

Each Development ticket can only be unlocked by one player (unless explicitly stated otherwise). Whether because nobody has unlocked it, or because your opponent unlocked it, you still cannot build on or connect to a parcel you do not own. In episodes that permit both players to unlock the same Development ticket, unlocking a Development ticket does not unlock it for your opponent; each player must unlock their own.

Action: Move a Passenger

You are allowed to use your opponent’s completed links when transporting a passenger; however, you do not get paid for using your opponent’s link. In fact, you must pay your opponent for using it. You must pay your opponent **50% of what the passenger would have paid** to use their link on their turn, including the bonus for upgraded rail. Another way to think of it is as follows:

- **Normal link:** You must pay your opponent 50% (rounded up) of the number of rails in the link.
Example: Use your opponent’s 2-rail link, pay your opponent \$1. Use your opponent’s 5-rail link, pay your opponent \$3.
- **Upgraded link:** You must pay your opponent 75% (rounded up) of the number of rails in the link.
Example: Use your opponent’s upgraded 2-rail link, pay your opponent \$2. Use your opponent’s upgraded 5-rail link, pay your opponent \$4.

You are allowed to go below \$0.

Action: Build a Building

When you build a building on a parcel [that you own, of course], you immediately get **\$5**.

Action: Upgrade Completed Link

You cannot upgrade your opponent's links. Check the pen color if you forget whose link it is.

Action: Upgrade Building

You can upgrade a building built by your opponent. You get the **+3 HP**, and as usual **add a passenger** if the space did not have one.

Update

Both players can simultaneously play this phase. The Update phase can be played in turn order with the ABBA scheme if the players believe it will affect the gameplay. You only reclaim your own tickets (erase your own crosses); never your opponent's.

End of the Game

Additional final scoring:

- **-\$1 = -1 HP:** When the goal is HP, each \$1 you are below \$0 is -1 HP.
- **In a tie, more rails wins:** In the event of a tie, the player with more rails on the map wins. If it is still a tie, the player with more upgraded rails wins. If it is still a tie, replay the episode!

Variant: Bid for Turn Order

Instead of alternating who is Player A, you can agree to use this variant, which adds a small auction just before the first Action phase of each round. Starting with Player A, the players take turns bidding higher and higher dollar amounts until someone is unwilling to bid higher. Then the player who bid the most subtracts that bid from their money; the other player does not pay anything.

Episode Twists

Episode 1: Chicago 1858

Setup: Start the game with 0 stress and 1 Worker

New Twist: Connect 3 Industries to each other. The 3 industries must be directly linked.

Remember that building in a Forest space is -1 HP.

You will stay in Chicago for 7 rounds!

Episode 2: London 1860

New Twist: Start the game with 0 stress and 1 Worker

New Goal: Connect 2 upgraded Leisure buildings with an upgraded link.

You will stay in London for 9 rounds!

Episode 3: Berlin 1865

New Twist: When you upgrade a link, you earn 3 Happiness Points.

New Goal: Connect 2 Industries with an upgraded link.

Episode 4: Cape Town 1863

This puzzle is only for 1 player!

New Twist: To build rail in the spaces with a brown border does not cost Rail icons. In other words, you can build as many as you want during your Build a Link action!

New Goal: Connect all Industries with a continuous upgraded link.

Episode 5: Cairo 1896

New Twist: You can upgrade an already-upgraded Building if it is adjacent to the River squares. It earns you 5HP instead of 3HP.

New Goal: Upgrade all RCLI at least once.

You will stay in Cairo for 8 rounds!

Tips: When you upgrade an upgraded building add second ^, like adding a chevron. :=)

Episode 6: Budapest 1866

New Twist: When you upgrade a link, you earn 3 Happiness Points.

New Goal: Connect 2 Commercial Building with upgraded links.

You will stay in Budapest for 8 rounds!

Episode 7: Madrid 1871

New Twist: When you build on a space that has a Rail icon, you can use this icon as if it were a ticket with one Rail icon for a subsequent Build a Link action. ✘ the space when you use it; like a normal ticket, you can erase the ✘ with Update Phase: Reclaim Tickets if you want to use it again.

New Goal: Connect at least 2 Parks to your Network.

New Goal: Upgrade 2 Residence Buildings.

You will stay in Madrid for 9 rounds!

Episode 8: Lisbon 1873

New Twist: There are a few icons on the HP track. You can use them as soon as you reach them or save them to use later. You can only use each one once, so ✘ it when you use it. You must apply the Increase Your Stress icon immediately when you reach it, but still only once. Use the Money icon during the Money Phase. Other Destination icons can be used for actions as if they were on a ticket, but still only once.

New Goal: Finish the game with a Passenger on each and every building space!

You will stay in Lisbon for 8 rounds!

Episode 9: Napoli 1875

New Twist: The volcano space is impassable. Building on the mountain spaces and the lava-stick tiles cost 2 Rail icons. At the end of each Round, make a ^ on a gray square that is adjacent to either a Mountain square or an already stuck square. If there is a Link, it is destroyed and can not be used or rebuilt anymore. You can not stick a Parcel or a Building. But you can still build on a ^ if no rail has ever been built. Increase your Stress by one at the end of Round V, VI, VII and VIII...